

COBBLESTONE ARCHITECTURE OF UPSTATE NEW YORK.
An Account of a Regional Masonry Technique.

Text and Photographs

by

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Portions of this paper were presented to the Central New York Chapter of the Society of Architectural Historians at the meeting held on October 15, 1955, at the University of Rochester.

Cobblestone houses, which are seen in abundance along the highways between Syracuse and Buffalo, have aroused the interest of many an architect and architectural historian and have given rise to much local enthusiasm and investigation. Little is known of the builders who built the many fine examples of rural architecture of Upstate New York¹⁾. To complicate matters, in the study of cobblestone architecture information has to be obtained about masons in addition to carpenters and original owners. The worker in the field meets with an entanglement of local legend and inaccurate dates which have become firmly established. The territory to be covered is vast: From Erie to Watertown along the Great Lakes, to Albany in the East and to the Pennsylvania border in the South, not including the extreme outposts in Ohio, Michigan, Canada and Vermont. However, the greatest concentration of cobblestone architecture is found within a radius of roughly one hundred miles around Rochester.

WHAT IS COBBLESTONE ARCHITECTURE?

Cobblestone architecture is a regional masonry technique expressed in the prevailing styles of the time from about 1828 to 1854 and used in domestic, civil and ecclesiastical buildings.²⁾ It is developed from the most easily accessible building material of this area, namely

cobblestones. Cobblestone masonry has its origin in the geology of Upstate New York and in traditions of rubble wall techniques imported from Europe, particularly from England. It served the demands of the pioneer farmers especially well, as the gathering of stones cleared their fields, and the building material could be accumulated at convenient times with the help of all members of the family. These houses, which are created from the soil on which they stand, are ideally suited to the climate of the region, and their stability is proved by the many remaining examples. Cobblestone masonry, which originally served as a mere convenience, gradually developed its own canons of beauty. The aesthetic appeal of cobblestone buildings depends upon the ingenuous exploitation of the inherent qualities of the material. Architectural detail, which is more successfully offset by clapboard or brick walls, is found to be of average quality. It is therefore appropriate that we concentrate on the aspects of masonry techniques and wall embellishment in this study.

BUILDING MATERIALS

Since cobblestone masonry is so closely wedded to the soil of the region, and since wall textures reflect geological features, it is necessary to mention briefly the geological structure of the area. 3)

The bedrock of the Great Lakes region consists of several strata of limestone, shale and sandstone. Upon this rests a layer of sand, clay and gravel deposited by glacial action. This glacial till contains the cobblestones which form our building material.⁴⁾ Two types of cobblestones are encountered: The squarish "glaciated" cobblestone, and the more rounded "water-laid" cobblestone. Glaciated cobblestones are primarily found in the drumlin region east and south of Rochester,⁵⁾ while water-laid drift predominates along Route 104, also known as Ridge Road East and Ridge Road West. These routes are old Indian trails which, as the name implies, went along a ridge formed by the shore line of glacial Lake Iroquois. It is along this path that we find the greatest concentration of cobblestone houses.

In addition to these cobblestones of glacial origin, "glaciated" or "water-laid", there is a third type, the lake-washed cobblestone, found and gathered on the shores of present Lake Ontario. Their surface is as smooth as an eggshell, and their shape a perfect round or flat oval. These qualities lend themselves to the most admirable masonry work.

Pioneer builders used not only the cobblestones of the area, but also other local materials, such as limestone,

dolomite and sandstone for the solid stone members of the wall, and pebbles, sand and lime extracted from local limestone, for their mortar. It is known that the lime was slaked on the premises, while the burning of the lime was a commercial enterprise. Such road names as Limekiln Road testify to this activity and have led to the discovery of a ruined kiln close to a cluster of cobblestone houses.

MASONRY TECHNIQUES

With this assortment of raw materials pioneer builders and masons developed three distinct methods of laying up walls, as illustrated in figures one to three.

Fig. 1 shows a solid coursed rubble wall ("coursed" as distinguished from "random" rubble wall). Three vertical layers of glaciated cobblestones are interlaced. The outside shows fairly regular courses, while the inside is of an irregular pattern which originally was covered with plaster.

Fig. 2 shows a facing of lake-washed cobbles of sedimentary origin with bonding stones reaching into a rubble core. The facing stones are of irregular dimensions, but the outwardly exposed tips match perfectly in shape and size. The facing is likely to have been laid up along with the backing wall. Since backing walls most probably are constructed

of materials found in the immediate neighbourhood, a great variety of compositions may be found. One is reminded of the Roman cement-core wall which made use of all locally available materials which would insure a strong cement. The facing too is reminiscent of the various Roman opera and their function of giving stability to the wall. However, contrary to the Roman techniques, the cobblestone facing remains exposed and is, in the manner of the various appareils of pre-Romanesque masonry, a means of wall embellishment.

Fig. 3 shows the technique which is most subject to destruction. A rubble wall, in this case of roughly hewn stone, is laid up first, and a mortar and cobblestone veneer is added separately. Cobblestones are small and there are no bonding stones. Once water penetrates behind this veneer and frost-wedging sets in, deterioration progresses rapidly. The region in which this technique has been used most widely (Greece, Parma and Hilton) shows a much higher percentage of patched walls than other localities. - There are, doubtlessly, many variations of these three basic methods.

No records describing the manner in which the masons worked have as yet come to light. Much has been made of the secrets and special tools that each mason was supposed to have guarded jealously. Granted that the masons were not anxious to show competitors shortcuts to success, such

legends may be largely discounted. The techniques of rubble wall construction in general are commonly known and can be reconstructed from contemporary and modern masons' guides and handbooks. The only account specifically dealing with cobblestone technique that I have been able to find, occurs in a regionally published handbook and is as follows:

"Cobbles. What is called cobblestone work looks very well in cottages. The walls are built of the roughest and most irregular stones, and the outside thickly coated with strong mortar into which are hammered wet cobblestones, forming regular horizontal courses of similar sized stones, the intermediate space being stuck with pebbles in as great variety of hues as can be obtained. (This passage is rather obscure.) But the quoins of this style of building should be regularly built up and bonded into the wall. They may be bush-hammered or hammer-dressed." 6)

A more recent manual tells us the following: 7)

"Cobblestone or "Niggerhead" Facing. 8) Retaining-walls, fences, and in some cases walls of dwelling-houses are built faced with cobblestones To keep these stones straight and in line until the mortar hardens is a very difficult piece of work for the mason. A quick and easy method is to build a form of plank for the face of the wall, and build the cobblestones up against this form. This will make a straight and even wall, such as can be obtained in no other way. After the mortar has hardened the form can be taken down and the joints between the cobblestones cleaned out and pointed."

A still later publication 9) suggests that wet sand be put "in front of each stone as it is layed" to keep the stones clean. The sand will fall off when the board is removed.

In any case, the techniques were laborious and little work could be accomplished in one day. The weight of the mortar, which forms a large percentage of the wall, restricted the mason to two to three rows at the time in order to prevent sagging.

The above quotations pertain to the second and third techniques discussed; the first is a simple coursed rubble wall technique used for centuries in Europe as a backing for ashlar or, covered with whitewash, as a poor man's masonry in cottages and farm buildings. That the walls in this country were neither plastered nor painted on the outside was perhaps an economy measure of the thrifty settlers from New England, the Quakers or others, whose names are connected with the earliest cobblestone buildings.

ORIGIN OF COBBLESTONE MASONRY

No definite links have been established between Upstate New York cobblestone techniques and their possible origin. The second and third techniques, which incidentally give the wall the same outward appearance, seem to have been introduced somewhat later than the first. In several instances the names of masons who worked in these more refined techniques are known, and late examples show a craftsmanship which definitely appears to be the work of trained professional masons.¹⁰⁾ But the origin of these masons is not known.

Although I have no proof of the following theory I should like to suggest that techniques two and three originated at least partly in the English flintstone wall.¹¹⁾ The following description of three types of flint wall must suffice:¹²⁾

"Large pieces (of flint) are sometimes split, chipped square and built in regular courses; (this technique is known today as "knapped" flint walling) or smaller flints are split, the split surface forming the face; 13) or thirdly the flint pebble is used in one piece."

I have in my possession a recent photograph, taken to my specifications, of a church wall in Sussex (ca.1700) which illustrates the third technique of unsplit flint "pebbles" layed in straight rows showing the same jointing and pointing up between the stones as used in this region. The mortar, however, due to locally available materials, is coarser than is found anywhere here. I have been assured that the examples of this type of flint wall can be multiplied many times. It is therefore safe to assume that flint walling in the Southeast of England has a decided influence on our regional technique. This does not exclude the possibility of other influences.¹⁴⁾

TEXTURES, PATTERNS, AND COLORS OF WALLS

There are unnumerable modifications of textures achieved by any number of combinations of the following

contributing factors: size, shape and surface of cobbles; number of courses per quoin (standard measure about 12 in. height); number of cobbles per horizontal unit-measure; angle of stone to join, and degree of protrusion of cobbles beyond the wall surface. However, most textures are variations of two basic types: the glaciated texture (fig.4) and the lake-washed texture (fig.5).

Among the designs which are encountered frequently is the herringbone pattern executed in both lake-washed and glaciated materials. As beautiful as this pattern is, it is often found relegated to sidewalls, porches or even a back wall. Herringbone courses can be laid up of stones in a variety of sizes, since the slant of the stone will compensate for its height. Apparently builders were not as impressed with this pattern as they were with the almost mechanical appearance of regular rows of small lake-washed cobbles which did not allow such freedom of handling.

There are two basic wall colors: yellow-gray is predominant in most glaciated textures which are composed of fragments of limestone, various granites, quartzites and some sandstone. - Red, as of Medina sandstone, is the color of lake-washed textures with its variations from pink to brown. - Unusual colors are found in walls composed entirely of lake-washed cobbles of igneous origin.

The Gothic House at Elbridge, for example, has a general tonality of greenish-gray.

Other important contributing factors in the variations of textures are the composition of the mortar, which varies from pebbly to sandy, and the jointing. Coarse pebbly mortar does not lend itself to fine tooling, therefore joints are shaped by the use of a trowel. In the finer mortars we find "V" joints and beads of machine-like perfection, which are obviously executed with a molding tool. There is remarkable inventiveness in the little tool marks between the stones. (All textures reproduced here have been photographed to scale.)

WALL EMBELLISHMENT

Nothing testifies more strongly to the builder's fine feeling for his material than the way in which he used the stone for wall embellishment. Patterns and color schemes are entirely derived from materials of the immediate neighbourhood and show strong regional variations. As might be expected, most care has been given to the appearance of the front wall. Close inspection proves that some embellishment is of functional as well as decorative value, serving for purposes of leveling and bonding.

As mentioned before, textures and wall embellishment

show strong regional characteristics. The three main regions are the north-east region, covering the area along Lake Ontario and Ridge Road East; the western region along Ridge Road West, and the southern region comprising a wedge of about 90 degrees south of Rochester. The latter is the largest but from a point of view of masonry the least interesting area.

Before discussing the characteristics of each region, it should be emphasized that this three-part division is a necessary simplification. Although characteristics of one region do not in general overlap another, distinctive features of smaller areas are equally outstanding.

Northeast of Rochester brownish-red is the general tonality of the building material. Along the Lake smooth, lake-washed, red sandstone cobbles form the front wall of buildings, while frequently salt-and-pepper effects are found on the sides. ¹⁵⁾ The side walls may also be laid up of coarser cobbles gathered from the fields. In some cases the back wall is of roughly hewn fieldstone. An outstanding characteristic of the area around Alton is colored banding. Courses of white and red cobbles alternate in various proportions, one to four, two to two and other combinations. - Further inland, cobblestones are larger and of the water-laid variety.

Quoins, lintels, water tables and other solid members are of limestone.

West of Rochester we find much pinkish red combined with grays. The cleavage of Medina sandstone leads to long, flat cobbles which in one case have been used in a ragstone technique (Morton School House). Stones are large and irregular and herringbone bands are introduced as levelling courses. Lintels and quoins are of Medina sandstone; flat arch lintels are executed in red sandstone cobbles.

Buildings of the southern region show a tonality of yellow-gray. Limestones form a large proportion of the wall and cobbles are squarish. Limestone is the material for lintels and quoins. ¹⁶⁾ Walls are plain, without embellishment by patterns or color schemes. Smaller stones are used in front up to five rows per quoin; side walls have three to four, and back walls as few as two rows to a quoin.

There is a fourth group which, for want of a better term, may be called the inter-regional group. The building material of these dwellings is not of local origin, but is brought over many oxcart miles from Lake Ontario. Stones are small, leading up to six rows to a quoin, and carefully selected for size and color. The jointing is done with a molding tool

and masonry, including the tooling of the solid wall members, shows high professional skill. Dwellings are large, proud structures with carefully executed architectural detail. Dates range from about 1848 onwards.¹⁷⁾

ARCHITECTURAL STYLES

Space does not permit an enumeration of all uses of cobblestone technique. Suffice it to say that such utilitarian structures as smoke houses and garden walls are included. Village stores, blacksmith shops, an insurance building and a great many one and two-room country school houses of charming proportions in a simplified Greek style are found. Among the churches the most dignified are the First Baptist Church in Webster, dedicated 1857, and the Baptist Chapel in Phelps, 1845. Delightful is the Quaker Meeting House in Scottsville (1834) with its separate entrances for men and women.

The majority of structures are domestic dwellings embracing the Post-Colonial, Greek Revival and Romantic Revival styles, with the Greek Revival predominant. Styles do not necessarily reflect a chronology of dates. Inconsistencies of styles are frequent. It is not the purpose of this study to discuss stylistic considerations, but a short description might be of interest.

The typical Post-Colonial cobblestone dwelling is the "blockmass" house with the five-bay front and the transom or elliptical fanlight over the entrance door.

- The Greek Revival phase shows a variety of plans and elevations. There is the one-story cottage with grilled frieze-windows, with or without entrance porch, and the story-and-a-half gabled cottage. The larger houses have frequently two stories and a one story wing. They are two or three bays wide. The wing was often built first and served as winter quarters, while the "upright" was used during the summer and Sundays. Porticoed fronts and balanced wings are in the minority. Doric detail prevails. A fine example in the Ionic order is the Barron House in Geneva, 1848, with a templefront and balanced wings. Unique is a house at Holland Patent with a tetrastyle portico the columns of which are executed in cobblestone.

Examples of the Gothic are sparse. The cottage type is represented by the King House in Phelps, 1842, and the Baker House in Macedon, 1850. They are almost identical in their symmetrical composition with pointed window arches and a central gable piercing the roof. The Gothic Munro House at Elbridge, 1851, merits a short discussion. It is the only cobblestone house known to have been built by a professional architect, the Englishman Thomas Atkinson. The house was built for John Munro and is now inhabited by his grandson LeRoy Munro. The architect's handbooks are in the possession of his grandson, Mr. Earl T. Atkinson of Canandaigua. Thomas Atkinson who also built the Gothic cottage at 24 Van Anden Street, Auburn,

apparently did not use a British publication, but seems to have been inspired by the A. J. Davis house for Wm. J. Rotch of Bedford, Massachusetts. 18)

Certain masonry detail suggests that the same workman who was engaged for the Munro House, also did the Barron House and the J. Rippley Jr. House, both of Geneva. The interior of the Rippley House resembles that of the Munro House and might also be the work of Thomas Atkinson.

DOCUMENTARY SOURCES

Fortunately some contemporary accounts are still available. Of greatest importance are the Pardee Papers in the Rush Rhees Library of the University of Rochester. The Pardee House, on Pardee Road in the town of Irondequoit, is a two-story Greek Revival structure with a fine entrance door. The front is of red lake-washed sandstone, unfortunately somewhat weathered. The McIntosh History of Monroe County of 1877 states that in April, 1839, Hiram Pardee was elected commissioner of highways. The house may be dated 1847, although there are entries as late as 1849, such as the following: "to cash for patterns and moldings \$5.12 by 1 1/2 bushels buckwheat Paid." There are pages of interesting and important items which I cannot begin to reproduce. The reproduced photostatic copy gives an account of payments to the mason. The joiner Alexander

Wilson received \$169.--. "Paid for graining \$2.--". Six door panels still have the original graining. "Black walnut for stairs \$6.34", and so forth.

Amusing is the account book of Zimri Waters of Pultneyville. From a family register on a framed Currier and Ives print we learn that Zimri Waters was married to Alice Brewer in Pultneyville on March 2nd, 1842. The last of seven children was born in a cobblestone house, dated 1850. Zimri Waters seems to have lived lustily. There are many "fine boots" at \$3.50 a pair and the female help in the house changes frequently (at \$1.- per week), whereupon each time Mr. Waters pays for ribbons, silk, dressmaker and "Milner for Bonnett \$2.25". The hired man must have caused Mr. Waters some worry. In 1852 John Lambright loses time: One day "did not come", one day "had the fever and ague", one day "celebrated", four days "broke his neck".

The house is a one story Greek Revival building with frieze-windows, wide entrance door and one wing. It is built of the finest lake-washed red cobbles, six rows to a quoin with molded bead joints. Interesting items in the account book are:

"Make 15 doors	\$15.-
make window frames	21.-
sash doors	3.25
front door	3.- (about 3 in.thick!)
hand rail and banister	20.-
blinds for house	64.-"

A much earlier account is preserved in a letter of P. P. Bonsteel of Victor, Ontario County, addressed to the Cultivator and printed in 1842. 19) Mr. Bonsteel built his house in 1835. It has a five bay front and a one story ell. " ... the cellar wall 20 inches thick to first floor, drop off two inches to second floor, then drop off two inches and extend out to top.... I used the common stone lime, one bushel of lime to seven of sand Furnished all materials on the ground, and paid my masons \$3.75 per hundred feet. He furnished his own tenders and made his own mortar; built his own scaffolds, and tended themselves. I boarded them The stone I do not consider any expense as it frees the land of them. There is no painting to be done to it as is required of brick or wood I did not keep an exact account of my building, as the stone, sand, and lime were brought at leisure spells...."

The house is kept up beautifully to this day.

Cobblestone architecture was a folk art, created from the materials of its own site. Since it is a rural development we are hopeful that it may be spared the destructive apparatus of "progress" for at least another hundred years.

Taber House, Castile. 1844.

Moses Hayden House, York. Dated 1828 by county historian. House was built for first judge of Livingston County, hence the availability of records at such early date. The stylistic conglomeration is obvious, but its history not certain.

John Munroe House, Elbridge. 1851. Date from family records. The house is built of lake-washed cobbles of igneous origin which I have been able to trace to Oswego beach, about fifty miles north of Elbridge.

H erendeen House, Farmington. 1832. One of the earliest dated houses. Glaciated stone, almost too large to meet the specification of "cobblestone".

Polygonal block, Bouckville. 1850.

Colored banding, Alton Church, about 1848 (?). Red sandstone and white quartzite. A typical treatment of the north-east region.

District School No.8, Parma. 1847. Mixed igneous and sedimentary small cobbles, laid five to a quin.

Fig.1 as described in text

Fig.2 as described in text

Fig.3 as described in text

Typical glaciated texture. Cobblestones are carefully selected for height

Typical glaciated texture. Cobblestones are sorted for height and laid in fairly even rows.

Typical lake-washed texture. Stones are carefully selected for color. This is red sandstone.

Herringbone pattern in lake-washed red sandstone cobbles.

First Baptist Church, Webster. Dedicated 1857. Very small lake-washed red sandstone cobbles.

Quaker Meeting House, Scottsville, 1834. Large glaciated cobbles laid three rows to the roughly hewn quoin.

FOOTNOTES

I am indebted to Carl K. Hersey, Chairman, Department of Fine Arts, University of Rochester, and to Mrs. Bertha L. Guptill for much help; to Mrs. Agnes Gilchrist and Abbott Cummings for their encouragement, and to Mr. Herbert S. Rand of Syracuse and many other kind persons for helpful information.

1. Talbot Hamlin, Greek Revival Architecture in America. New York: Oxford University Press, 1944.
2. 1854 is the year of the latest dated domestic dwelling. There are single minor cobblestone structures of a later date such as a cemetery vault in Elbridge, 1879. The First Baptist Church in Webster was dedicated in 1857, but the beginning of its building period probably dates from before 1854. Dates earlier than 1828 are insufficiently documented.
3. For the geology of the Genesee region see Thomas G. Paine, The Genesee Country. Rochester: Rochester Museum of Arts and Sciences, 1938.
4. Cobblestones are fragments of rock from about 2 1/2 to 10 in. in diameter, which have broken off from the parent rock and have been transported from their original position. During this transportation by glacial ice or water, erosion has taken place and the stone has been more or less rounded. It is obvious that more erosion takes place during a long path of transportation than during a short travel. It is also obvious that soft stone, i.e. fragments of sedimentary rock, will erode more readily than fragments of hard rock of igneous origin.
5. This area is dotted with small hills of the shape of an inverted spoon, the steep side facing north in the direction of the path of the glacier. They are deposits of assorted glacial debris.
6. C. P. Dwyer, The Economic Cottage Builder. Buffalo: Wanzer McKim and Co., 1856, p. 35.

Thank you for introduction

Ladies and gentlemen

- 1. pleasure to ^{speaking} talk
- 2. have been looking forward to this evening

The Topic of my talk

Origins of Cobblestone Architecture

I am treating it mostly from the point of view of masonry technique

since it is ~~in this~~ ^{this is the} aspect ~~in which~~ ^{that in which}

~~the Rochester area~~ ^{our region} makes a distinct contribution to the history of American Architecture.

Stylistically there is no difference between cobblestone architecture and brick, stone or clapboard architecture.

~~In speaking about the origin of cobblestone arch.~~ ^{the origin of} I am going to discuss ~~it~~ ^{cobblestone architecture in} ~~origin in~~

- 1.) European masonry techniques
- and in 2.) the geology of our region.